

What is claimed is:

1. A semiconductor device having bump electrodes electrically connected to connection pads formed on a semiconductor chip, tips of the bump electrodes exposing at a surface of a sealing resin film formed on a surface of the semiconductor chip, wherein

the sealing resin film is comprised of a low-elastic resin layer formed on the surface of the semiconductor chip and a high-elastic resin layer formed on a surface of the low-elastic resin layer and having an elastic coefficient higher than that of the low-elastic resin layer, a thickness of the high-elastic resin layer being between 5 μm and 45 μm .

2. A semiconductor device according to claim 1, wherein a ratio of a thickness of the low-elastic resin layer to the thickness of the high-elastic resin layer is between 3.5 and 8.

3. A semiconductor device according to claim 2, wherein the low-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 8 ppm and 180 ppm and a room-temperature bending elastic modulus which is between 0.5 Gpa and 4 Gpa, and the high-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 5 ppm and 13 ppm and a room-temperature bending elastic modulus which is between 9 Gpa and 21 GPa.

4. A semiconductor device according to claim 3, wherein the low-elastic resin layer is made from one of polyimide, benzocyclobutene, and polybenzoxazole, and the high-elastic resin layer is made from epoxy resin.

5. A semiconductor device according to claim 2, wherein the surface of the low-elastic resin layer has sloping sections at the vicinities of the bump electrodes.

6. A semiconductor device according to claim 5, wherein thickness of the sloping sections decreases with increasing distance from the bump electrodes.

7. A semiconductor device according to claim 5, wherein the low-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 8 ppm and 180 ppm and a room-temperature bending elastic modulus which is between 0.5 Gpa and 4 Gpa, and the high-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 5 ppm and 13 ppm and a room-temperature bending elastic modulus which is between 9 Gpa and 21 GPa.

8. A semiconductor device according to claim 7, wherein the low-elastic resin layer is made from one of polyimide, benzocyclamatebutene, and polybenzaoxazole, and the high-elastic resin layer is made from epoxy resin.

9. A semiconductor device according to claim 1, wherein the surface of the low-elastic resin layer has sloping sections at the vicinities of the bump electrodes.

10. A semiconductor device according to claim 9, wherein thickness of the sloping sections decreases with increasing distance from the bump electrodes.

11. A semiconductor device according to claim 9, wherein the low-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 8 ppm and 180 ppm and

a room-temperature bending elastic modulus which is between 0.5 Gpa and 4 Gpa, and the high-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 5 ppm and 13 ppm and a room-temperature bending elastic modulus which is between 9 Gpa and 21 GPa.

12. A semiconductor device according to claim 11, wherein the low-elastic resin layer is made from one of polyimide, benzocyclamatebutene, and polybenzaoxazole, and the high-elastic resin layer is made from epoxy resin.

13. A semiconductor device according to claim 12, wherein the low-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 8 ppm and 180 ppm and a room-temperature bending elastic modulus which is between 0.5 Gpa and 4 Gpa, and the high-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 5 ppm and 13 ppm and a room-temperature bending elastic modulus which is between 9 Gpa and 21 GPa.

14. A semiconductor device according to claim 13, wherein the low-elastic resin layer is made from one of polyimide, benzocyclamatebutene, and polybenzaoxazole, and the high-elastic resin layer is made from epoxy resin.

15. A semiconductor device having bump electrodes electrically connected to connection pads formed on a semiconductor chip, tips of the bump electrodes exposing at a surface of a sealing resin film formed on a surface of the semiconductor chip, wherein

the sealing resin film is comprised of a low-elastic resin layer formed on the surface of the semiconductor chip and a high-elastic resin layer formed on a surface of the low-elastic

resin layer and having an elastic coefficient higher than that of the low-elastic resin layer, and

the surface of the low-elastic resin layer has sloping sections at the vicinities of the bump electrodes, thickness of the sloping sections decreasing with distance from the bump electrodes .

16. A semiconductor device according to claim 13, wherein a ratio of a thickness of the low-elastic resin layer to the thickness of the high-elastic resin layer is between 3.5 and 8.

17. A semiconductor device according to claim 16, wherein the low-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 8 ppm and 180 ppm and a room-temperature bending elastic modulus which is between 0.5 Gpa and 4 Gpa, and the high-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 5 ppm and 13 ppm and a room-temperature bending elastic modulus which is between 9 Gpa and 21 GPa.

18. A semiconductor device according to claim 17, wherein the low-elastic resin layer is made from one of polyimide, benzocyclobutene, and polybenzoxazole, and the high-elastic resin layer is made from epoxy resin.

19. A semiconductor device according to claim 15, wherein the low-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 8 ppm and 180 ppm and a room-temperature bending elastic modulus which is between 0.5 Gpa and 4 Gpa, and the high-elastic resin layer is comprised of a resin with a thermal expansion coefficient which is between 5 ppm and 13 ppm and a room-temperature bending elastic modulus

which is between 9 Gpa and 21 GPa.

20. A semiconductor device according to claim 19, wherein the low-elastic resin layer is made from one of polyimide, benzocyclamatebutene, and polybenzaoxazole, and the high-elastic resin layer is made from epoxy resin.

21. A semiconductor device comprising:

a semiconductor chip having electrode pads formed on a major surface thereof;

a plurality of bump electrodes formed over the major surface and electrically coupled to the electrode pads, each of the bump electrodes having top and side surfaces; and

a sealing resin covering the major surface and the side surfaces of the bump electrodes so as to expose the top surfaces of the bump electrodes,

wherein the sealing resin is comprised of a first layer formed over the major surface and a second layer formed on the first layer, the second layer having an elastic coefficient higher than that of the first layer and a thickness between 5 micrometers and 45 micrometers.

22. A semiconductor device according to claim 21, wherein a ratio of the thickness of the second layer to a thickness of the first layer is between 3.5 and 8.

23. A semiconductor device according to claim 21, wherein the first layer has an inclination surface at each of regions adjacent to the bump electrodes.

24. A semiconductor device according to claim 23, wherein a thickness of the first layer at each of the regions where the inclination surface is provided decreases with increasing

distance from the bump electrode.

25. A semiconductor device comprising:

a semiconductor chip having electrode pads formed on a major surface thereof;

a plurality of bump electrodes formed over the major surface and electrically coupled to the electrode pads, each of the bump electrodes having top and side surfaces; and

a sealing resin covering the major surface and the side surfaces of the bump electrodes so as to expose the top surfaces of the bump electrodes,

wherein the sealing resin is comprised of a first layer formed over the major surface and a second layer formed on the first layer, wherein the second layer has an elastic coefficient higher than that of the first layer and wherein the first layer has an inclination surface at each of regions adjacent to the bump electrodes.

26. A semiconductor device according to claim 25, wherein a ratio of a thickness of the second layer to a thickness of the first layer is between 3.5 and 8.

27. A semiconductor device according to claim 25, wherein a thickness of the first layer at each of regions where the inclination surface is provided decrease with increasing distance from the bump electrodes.